Amendments to the Claims:

Please replace all prior versions, and listings of claims in the application with the following listing of claims.

Listing of claims

Claim 1 (currently amended): A method of estimating interference in a terminal in a code division multiple access communication system, in which a pilot channel uses a scrambling code and the terminal uses an alternative scrambling code on a dedicated channel determined by a channelization code, comprising the steps of:

the terminal determining whether the terminal knows of an empty channelization code m under the alternative scrambling code;

if [[an]] the empty channelization code m is [[determined]] known to the terminal, then the terminal using the empty channelization code m for estimating the interference; and

~~otherwise~~ if the empty channelization code m is not known to the terminal, then the terminal estimating the interference by determining a variance of symbols in at least two portions of the dedicated channel.

Claim 2 (previously presented): The method of claim 1, wherein determining the variance of symbols in at least two portions of the dedicated channel is performed only after first determining that the communication system is not using discontinuous transmission (DTX).

Claim 3 (previously presented): The method of claim 1, wherein the at least two portions include a dedicated physical control channel (DPCCH) and a dedicated physical data channel (DPDCH).

Claim 4 (original): The method of claim 1, wherein the dedicated channel is a dedicated physical channel (DPCH) and the pilot channel is a common pilot channel (CPICH).

Claim 5 (currently amended): The method of claim 1, wherein the empty channelization code m is determined by the terminal based on either information of such an empty code or identification of the empty code.

Claim 6 (original): The method of claim 5, wherein the information of the empty channelization code m is included in a message sent to the terminal.

Claim 7 (original): The method of claim 5, wherein the information of an empty channelization code m is included in a specification of the communication system.

Claim 8 (original): The method of claim 7, wherein the information of an empty channelization code includes channelization codes used by a common control channel.

Claim 9 (previously presented): The method of claim 5, wherein identification of the empty channelization code m comprises the steps of:

generating an initial interference estimate (I-estimate);

setting a threshold based on the initial I-estimate;

selecting a candidate empty channelization code;

for the candidate empty channelization code, forming an I-estimate;

comparing the formed I-estimate to the threshold; and

if the formed I-estimate exceeds the threshold, selecting another candidate empty code and repeating the forming and comparing steps, otherwise identifying the candidate empty code as the empty channelization code.

Claim 10 (original): The method of claim 9, wherein the initial I-estimate is based on a variance of symbols in a signal received by the terminal.

Claim 11 (original): The method of claim 9, wherein the threshold is set as the initial I-estimate.

Claim 12 (previously presented): The method of claim 9, wherein the I-estimate is formed according to $I_m = \frac{1}{N}\sum_{k=1}^{N}\left|d_k^m\right|^2$,

wherein:

I_m is an estimate of interference power on a code m;

N is a number of symbols used in forming the I-estimate;

d_k^m represents a k-th symbol despread with respect to applicable scrambling and channelization codes.

Claim 13 (previously presented): The method of claim 1, wherein the interference for an empty channelization code m is estimated according to $I_m = \frac{1}{N}\sum_{k=1}^{N}\left|d_k^m\right|^2$,

wherein:

I_m is an estimate of interference power on a code m;

N is a number of symbols used in forming the I-estimate;

d_k^m represents a k-th symbol despread with respect to applicable scrambling and channelization codes.

Claim 14 (currently amended): The method of claim 1, wherein if [[an]] the empty channelization code m is not ~~determined~~ known to the terminal, then the interference is estimated by determining a variance of symbols according to $\hat{I}_{DPCH} = \frac{1}{N}\sum_{k=1}^{N}\left|a_d(k) - m_d\right|^2$,

wherein:

$\hat{I}_{DPCH}$ is an interference estimate for a dedicated physical channel (DPCH);

$a_d(k)$ is a complex amplitude of a k-th sample of a despread received signal d_k;

N is a number of complex amplitudes; and

m_d is a mean of a number N of the complex amplitudes.

Claim 15 (original): The method of claim 1, wherein a portion is a dedicated physical control channel (DPCCH).

Claim 16 (original): The method of claim 1, wherein the estimated interference is used for estimating a signal-to-interference ratio.

Claim 17 (currently amended): A method of searching for an empty channelization code m in a terminal in a code division multiple access communication system, comprising the steps of:

the terminal generating an initial interference estimate (I-estimate);

the terminal setting a threshold based on the initial I-estimate;

the terminal selecting a candidate empty channelization code m;

for the candidate empty channelization code m, the terminal forming an I-estimate;

the terminal comparing the formed I-estimate to the threshold; and

if the formed I-estimate exceeds the threshold, the terminal selecting another candidate empty channelization code and repeating the forming and comparing steps, otherwise the terminal identifying the candidate empty channelization code m as an empty channelization code.

Claim 18 (original): The method of claim 17, wherein the initial I-estimate is based on a variance of symbols in a signal received by the terminal.

Claim 19 (original): The method of claim 17, wherein the threshold is set as the initial I-estimate.

Claim 20 (previously presented): The method of claim 17, wherein the I-estimate is formed according to $I_m = \frac{1}{N}\sum_{k=1}^{N}\left|d_k^m\right|^2$,

wherein:

I_m is an estimate of interference power on a code m;

N is a number of symbols used in forming the I-estimate;

d_k^m represents a k-th symbol despread with respect to applicable scrambling and channelization codes.

Claim 21 (original): The method of claim 17, further comprising the step of estimating interference based on the empty channelization code.

Claim 22 (original): The method of claim 17, wherein a threshold is derived from the initial I-estimate by filtering the initial I-estimate.

Claim 23 (original): The method of claim 17, wherein the candidate empty channelization code m is selected based on predetermined code allocation rules.

Claim 24 (original): The method of claim 17, wherein the candidate empty channelization code m is selected by determining a channelization code used by a channel, locating the used channelization code in a code tree, and choosing as the candidate empty channelization code m a code in the code tree that is remote from the used channelization code.

Claim 25 (currently amended): An apparatus for estimating interference in a terminal in a code division multiple access communication system, in which a pilot channel uses a scrambling code and the terminal uses an alternative scrambling code on a dedicated channel determined by a channelization code, comprising:

[[a]] controller circuitry that determines whether the terminal knows of an empty channelization code m under the alternative scrambling code; and

an interference estimator, wherein if the controller circuitry determines that the [[an]] empty channelization code m is known to the terminal, then the interference estimator generates an estimate of the interference based on the empty channelization code m; ~~otherwise~~ and if the controller circuitry determines that the empty channelization code m is not known to the terminal, then the interference estimator generates the estimate of the interference based on a variance of symbols in at least two portions of the dedicated channel.

Claim 26 (currently amended): The apparatus of claim 25, wherein the controller circuitry determines the variance of symbols in the at least two portions of the dedicated channel only after first determining that the communication system is not using discontinuous transmission (DTX).

Claim 27 (currently amended): The apparatus of claim 25, wherein the controller circuitry determines the empty channelization code m based on either information of such an empty code or identification of the empty code, and the controller circuitry identifies the empty channelization code m by:

generating an initial interference estimate (I-estimate);

setting a threshold based on the initial I-estimate;

selecting a candidate empty channelization code;

for the candidate empty channelization code, forming an I-estimate;

comparing the formed I-estimate to the threshold; and

if the formed I-estimate exceeds the threshold, selecting another candidate empty code and repeating the forming and comparing steps, otherwise identifying the candidate empty code as the empty channelization code.

Claim 28 (original): The apparatus of claim 27, wherein the threshold is derived from the initial I-estimate by filtering the initial I-estimate.

Claim 29 (original): The apparatus of claim 25, wherein the terminal complies with a standard for a universal mobile telecommunications system.

Claim 30 (currently amended): A computer-readable medium containing a computer program for estimating interference in a terminal in a code division multiple access communication system, in which a pilot channel uses a scrambling code and the terminal uses an alternative scrambling code on a dedicated channel determined by a channelization code, wherein the computer program performs the steps of:

determining whether the terminal knows of an empty channelization code m under the alternative scrambling code;

if [[an]] the empty channelization code m is [[determined]] known to the terminal, then using the empty channelization code m for estimating the interference; and

~~otherwise~~ if the empty channelization code m is not known to the terminal, then estimating the interference by determining a variance of symbols in at least two portions of the dedicated channel.

Claim 31 (previously presented): The computer-readable medium of claim 30, wherein the computer program determines the variance of symbols in at least two portions of the dedicated channel only after first [[by]] determining that the communication system is not using discontinuous transmission (DTX).

Claim 32 (previously presented): The computer-readable medium of claim 30, wherein the computer program determines the empty channelization code m based on either information of such an empty code or identification of the empty code, and the computer program identifies the empty channelization code m by performing the steps of:

generating an initial interference estimate (I-estimate);

setting a threshold based on the initial I-estimate;

selecting a candidate empty channelization code;

for the candidate empty channelization code, forming an I-estimate;

comparing the formed I-estimate to the threshold; and

if the formed I-estimate exceeds the threshold, selecting another candidate empty code and repeating the forming and comparing steps, otherwise identifying the candidate empty code as the empty channelization code.

Claim 33 (currently amended): The apparatus of claim 27, wherein the controller circuitry forms the I-estimate according to $I_m = \frac{1}{N}\sum_{k=1}^{N}\left|d_k^m\right|^2$,

wherein:

I_m is an estimate of interference power on a code m;

N is a number of symbols used in forming the I-estimate;

d_k^m represents a k-th symbol despread with respect to applicable scrambling and channelization codes.

Claim 34 (previously presented): The apparatus of claim 25, wherein the interference estimator estimates the interference for an empty channelization code m according to $I_m = \frac{1}{N}\sum_{k=1}^{N}\left|d_k^m\right|^2$,

wherein:

I_m is an estimate of interference power on a code m;

N is a number of symbols used in forming the I-estimate;

d_k^m represents a k-th symbol despread with respect to applicable scrambling and channelization codes.

Claim 35 (previously presented): The apparatus of claim 25, wherein if an empty channelization code is not determined, the interference estimator estimates the interference by determining a variance of symbols according to $\hat{I}_{DPCH} = \frac{1}{N}\sum_{k=1}^{N}\left|a_d(k) - m_d\right|^2$,

wherein:

$\hat{I}_{DPCH}$ is an interference estimate for a dedicated physical channel (DPCH);

$a_d(k)$ is a complex amplitude of a k-th sample of a despread received signal d_k;

N is a number of complex amplitudes; and

m_d is a mean of a number N of the complex amplitudes.

Claim 36 (currently amended): An apparatus for searching for an empty channelization code m in a terminal in a code division multiple access communication system, comprising:

[[a]] controller circuitry that identifies the empty channelization code m by:

generating an initial interference estimate (I-estimate);

setting a threshold based on the initial I-estimate;

selecting a candidate empty channelization code m;

for the candidate empty channelization code m, forming an I-estimate;

comparing the formed I-estimate to the threshold; and

if the formed I-estimate exceeds the threshold, selecting another candidate empty channelization code and repeating the forming and comparing steps, otherwise identifying the candidate empty channelization code m as an empty channelization code,

wherein the I-estimate is formed according to $I_m = \frac{1}{N}\sum_{k=1}^{N}\left|d_k^m\right|^2$,

wherein:

I_m is an estimate of interference power on a code m;

N is a number of symbols used in forming the I-estimate;

d_k^m represents a k-th symbol despread with respect to applicable scrambling and channelization codes.